

lagoons, Florida. *J. Shellfish Res.* 8: 43-49.

SILAS, E.G & K. ALAGARSWAMI (1967): On an instance of parasitisation by the pea-crab (*Pinnotheres* sp.) on the backwater clam *Meretrix casta* (Chemnitz) from India with a review on the work on the systematics, ecology, biology and ethology of pea-crabs of

*Pinnotheres laterella*. *Proc. Symp. Crustacea, Mar. BW Ass. India* 3: 1161-1227.

THANGAVELU, R. & P.J. SANJEEVARAJ (1985): Fishery and biology of the clam *Meretrix casta* (Chemnitz) in the Pulicat Lake. *J. mar. biol. Ass. India* 27(1 & 2): 75-83.

23. ADDITIONS TO THE GRASS FLORA OF TAMIL NADU

While working on the flora of Mukurthi National Park (11° 10'-11° 22' N, 76° 26'-76° 34' E) and the Tropical Gene Pool Garden, Nadugani (11° 15'-11° 39' N, 76° 15'-76° 30' E) Nilgiris, Western Ghats, Tamil Nadu, we came across four rare, endemic and interesting grasses. On critical examination, they were identified as *Arthraxon lancifolius* (Trin.) Hochst., *Bothriochloa parameswaranii* Sreekumar *et al.*, *Eragrostis zeylanica* Nees & Mey. and *Isachne gracilis* C.E. Hubb. The voucher specimens are deposited in the Herbarium of Kongunadu Arts & Science College, Coimbatore for reference.

*Arthraxon lancifolius* (Trin.) Hochst, in *Flora* 39: 188. 1856; Fischer in *Gamble, Fl. Pres. Madr.* 1729. 1934 (Repr.

ed. 3: 1193. 1957); Bor, *Grass. Bur. Cey. Ind. Pak.* 100. 1960; Jain in *J. Ind. Bot. Soc.* 51: 176. 1972; van Welzen in *Blumea* 27: 288. 1981; Manilal & Sivaraj. *Fl. Calic.* 334. 1982; Sreekumar & Nair. *Kerala Grass.* 38. 1991. *Arthraxon lancifolius* Trin. in *Mem. Acad. Sci. Petersb. Ser. 6(2).* 271. 1832. *Arthraxon microphyllum* (Trin) Hochst. in *Flora* 39: 188. 1850; Hook. f, *Fl. Brit. Ind.* 7: 147. 1896. *Arthraxon microphyllum* Trin. *l.c.* 275. (Fig. 1)

So far, this grass is reported only from the states of Andhra Pradesh, Gujarat, Karnataka, Kerala and Maharashtra. The available literature pertaining to the grass flora of Tamil Nadu has not included this species. Hence, the present

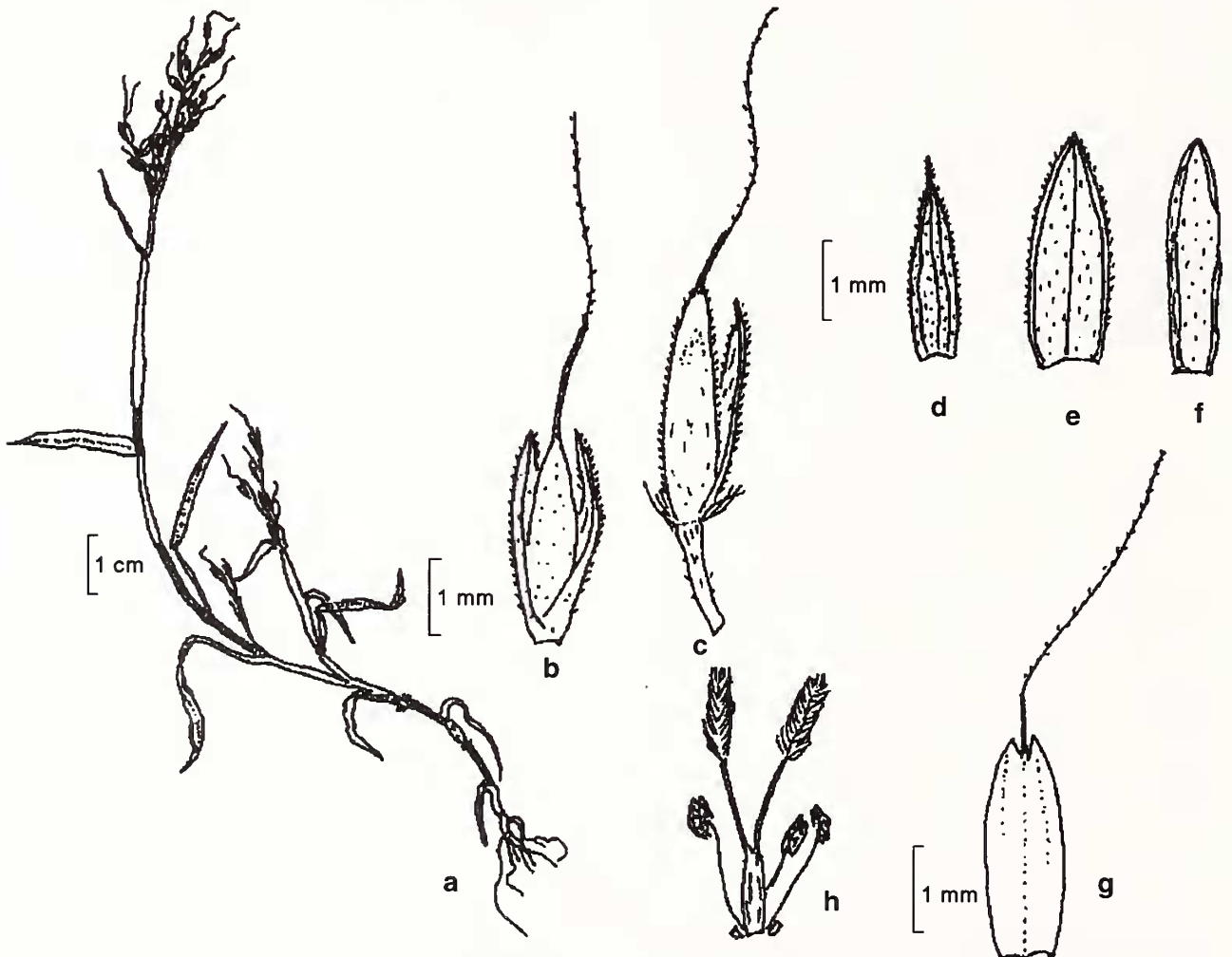


Fig. 1: *Arthraxon lancifolius* (Trin.) Hochst., a. Habit; b. Sessile Spikelet; c. Pedicelled Spikelet; d. Lower Glume; e. Upper Glume; f. First Lemma; g. Second Lemma; h. Stamen and Pistil

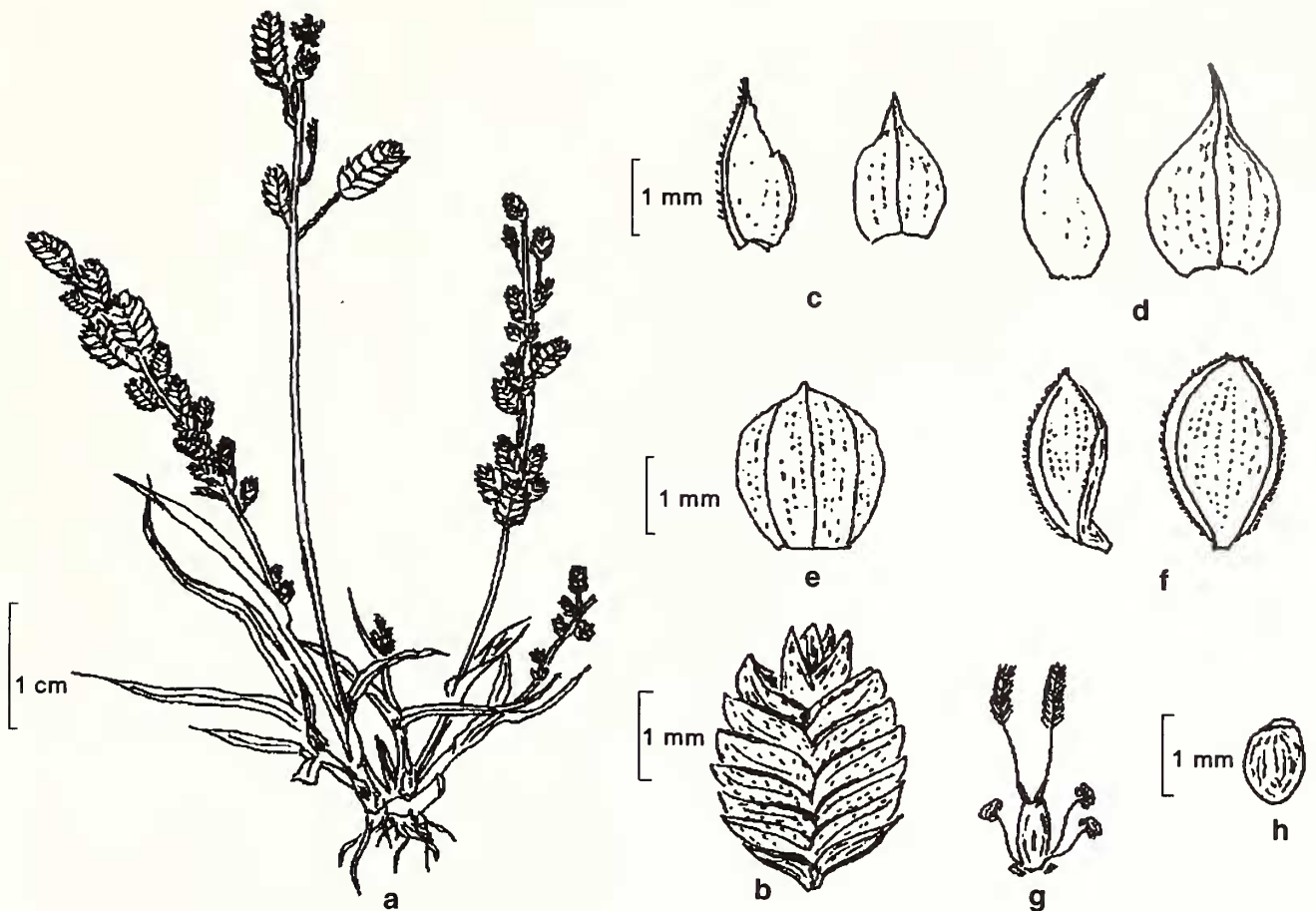


Fig. 2: *Eragrostis zeylanica* Nees & Mey., a. Habit; b. Spikelet; c. Lower Glume; d. Upper Glume; e. Lemma; f. Palea; g. Stamen and Pistil; h. Grain

gathering from Mukurthi National Park indicates its presence in Tamil Nadu, and it was observed that it is restricted to the hilltops above 2300 m above msl. The present report will form an addition to the existing grass flora of Tamil Nadu.

Annual. Culms up to 20 cm high, glabrous, nodes hairy. Sheaths keeled, glabrous or hairy. Blades 1.5-3 x 0.2 cm; margins laxly hairy, all over; upper and lower surface glabrous. Joints 2 mm long. Sessile spikelets 3 x 0.5 cm; callus hairy. Lower glume 3 x 0.5 mm, apex acuminate, 3-nerved; upper glume 3 x 0.5 mm, 3-nerved; lower lemma 2.5 x 0.2 mm, nerveless; upper lemma 2.5 x 0.4 mm, 1-nerved, awn 4 mm long; palea absent. Anthers 2, 0.5 x 0.2 mm. Styles 0.3 mm long, stigmas 0.7 mm. Pedicellated spikelets sterile, up to 4 mm long. Lower glume 3 x 0.4 mm, 3-nerved; upper glume 2 x 0.5 mm, 3-nerved; lower lemma 1.5 x 0.3 mm; upper lemma 1.5 x 0.2 mm, anthers 2, without pollen, up to 0.5 mm.

**Distribution:** Throughout India.

**Ecology:** Rare along the fringes of shola forests above 2300 m in hills.

**Specimen examined:** Tamil Nadu, Nilgiris, Mukurthi National Park,  $\pm$  2300 m. November 16, 2000; in flowering, V.S.

Ramachandran & C.P. Anil Varghese 2650.

*Bothriochloa parameswaranii* P.V. Sreekumar, C.P. Malathi & V.J. Nair in J. Bombay Nat. Hist. Soc. 85(1): 163-165. 1988; Sreekumar & Nair, Kerala Grass. 52. 1991.

A neo-endemic species was described by Sreekumar *et al.* (*l.c.*) from Eravikulam National Park, Idukki district, Kerala in 1988. Subsequent to type, this species was collected from Mukurthi National Park, Nilgiris, Tamil Nadu and is an addition to the grass flora of Tamil Nadu.

Perennial. Culms 10-20 cm high, erect, glabrous. Leaves lanceolate, 2-10 x 0.2-0.3 cm, base rounded, midrib prominent; ligules ovate, acute, 1 mm. Racemes digitate, purplish, joints 4 mm long, linear, ciliate. Sessile spikelets oblong, 6 mm long, callus bearded. Lower glume oblong, 7 x 1.25 mm long, acute, chartaceous, 7-nerved, keels pectinate towards apex, margins hyaline; upper glume ovate - lanceolate, acuminate, 7 x 1.25 mm, chartaceous, 3-nerved, margin hyaline, villose at the upper half. First lemma ovate-oblong, 5.5 x 1 mm, acute, delicate, hyaline. Palea absent. Second lemma stipitate, 4 mm long; awn 10 mm long, column 6 mm long, chestnut-brown.

Stamens 3, anthers 1-1.25 mm long, ovary oblong, 0.5-0.75 mm, styles c. 1 mm long. Stigmas 1 mm, feathery. Pedicellated spikelets oblong-lanceolate, 7 mm long, Rachis 3 mm long.

**Distribution:** Kerala and Tamil Nadu (Endemic to Western Ghats).

**Ecology:** Common in Grasslands, above 2300 m in hills.

**Specimens examined:** Tamil Nadu, Nilgiris, Mukurthi National Park, ± 2300 m. November 16, 2000; in flowering, V.S. Ramachandran & C.P. Anil Varghese 2611.

*Eragrostis zeylanica* Nees & Mey. in Nov. Act. Nat. Cur. 19. Suppl. 1: 204. 1843; Bor, Grass. Bur. Cey. Ind. Pak. 515. 1960; Nair & Ramach. in Bull. Bot. Surv. Ind. 22: 193. 1980 (1982); Sreekumar & Nair, Kerala Grass. 394. 1991. *E. elongata* sensu Stapf in Hook. f., Fl. Brit. Ind. 7: 319. 1896, non Jacq. 1813. (Fig. 2)

Earlier known only from Eastern India, Andaman and Nicobar Islands, Myanmar, Sri Lanka, Nair & Ramach. (*l.c.*) have reported its occurrence for the first time from southern India. The present collection from Tropical Gene Pool Garden, Nadugani, Nilgiris, Tamil Nadu records its presence in Tamil Nadu and also forms a new addition to the flora of Tamil Nadu.

Annuals. Culms up to 8 cm high, erect, nodes glabrous. Leaves lanceolate, 2.5 x 0.5-0.2 cm, rounded at base, glabrous, ligules fimbriate. Panicles oblong or ovate-oblong, 3.5 cm long, congested. Spikelets oblong-lanceolate, 2-3 mm. wide, acute, 8-10 flowered. Lower glume ovate-lanceolate, 1.5-2 x 1-1.5 mm; palea elliptic 1-1.5 x 0.5-1 mm long. Anthers 3, 0.25 mm long. Grain ovate.

**Distribution:** Eastern and southern India.

**Ecology:** Rare, along the forest margins of evergreen forests.

**Specimens examined:** Tamil Nadu, Nilgiris, Tropical Gene Pool Garden, Nadugani, ± 1000 m. November 16, 2000; in flower and fruit, V.S. Ramachandran & K.R. Devi 10426.

*Isachne gracilis* C.E. Hubb. in Kew Bull. 1927: 77. 1927; Fischer in Gamble, Fl. Pres. Madr. 179. 1934 (Repr. Ed. 3: 1244. 1957); Bor, Grass. Bur. Cey. Ind. Pak. 581. 1960; Vajravelu & P. Daniel in Jain & Sastry, Mat. Cat. Threat. Pl. India, 43. 1983; Ved Prakash & Jain in Fasc. Fl. Ind. 14: 25. 1984; 1: 227. 1984; Ahmedullah & Nayar, Endemic Pl. India. 1: 67: 1986; Sreekumar & Nair, Kerala. Grass, 422. 1991.

This is one of the neo-endemic grasses of Western

Ghats and its type locality is in Karnataka. However, Ved Prakash and Jain (1984) have reported its occurrence from Maharashtra and Madhya Pradesh, showing its disjunct distribution in India. Sreekumar and Nair (*l.c.*) have recorded it from Kerala for the first time from Silent Valley. This rare and endemic species was also collected from Tropical Gene Pool Garden, Nadugani, Nilgiris, Tamil Nadu; extending its distribution to southern Western Ghats, and forming an addition to the grass flora of Tamil Nadu.

A small elegant grass 5-25 cm high; stems soft, geniculate below, with slender fibrous roots. Leaves oblong-elliptic or elliptic-lanceolate 1-3 x 0.2-1.5 cm; acute, sparsely villous. Ligules membranous to obscure. Panicles lax, 1-10 cm long. Spikelets globose, 0.5-1 mm long. Lower glume oblong, 0.5 x 0.25 mm, chartaceous, faintly 5-7-nerved, softly hairy, 7-9-nerved, sparsely hairy. First lemma ovate-oblong. 0.5-1 x 0.5 mm, chartaceous; palea oblong, 0.5-1 x 0.5 mm, delicate; second lemma obovate, 0.5 x 0.5 mm, coriaceous, softly hairy, palea obovate or orbicular 0.5 x 0.5 mm, coriaceous, softly hairy. Anthers 0.25-0.5 mm long.

**Distribution:** Karnataka, Kerala, Madhya Pradesh, Maharashtra and Tamil Nadu.

**Ecology:** Occasional, on moist rocks and prefers dense shade.

**Specimens examined:** Tamil Nadu, Nilgiris, Tropical Gene Pool Garden, Nadugani, ± 1000 m, November 16, 2000; in flower and fruit, V.S. Ramachandran & K.R. Devi 10413.

#### ACKNOWLEDGEMENTS

We thank Dr. P. Daniel, Joint Director, Botanical Survey of India, Southern Circle, Coimbatore for permission to consult the herbarium and library. We are also grateful to Dr. M. Aruchami, Secretary and to Dr. K. Kumaraswami, Principal, Kongunadu Arts and Science College for providing necessary facilities and encouragement.

September 10, 2003

V.S. RAMACHANDRAN<sup>1</sup>

V. BALASUBRAMANIAM

P. PANDIKUMAR

P.G. and Research Department of Botany,

Kongunadu Arts & Science College,

Coimbatore 641 029,

Tamil Nadu, India.

<sup>1</sup>Email: vsrbot@yahoo.co.in

#### REFERENCES

AHMEDULLAH, M. & M.P. NAYAR (1986): Endemic Plants of Indian Region (Vol I). Botanical Survey of India, Calcutta.  
BOR, N.L. (1960): The Grasses of Burma, Ceylon, India and Pakistan.

Pergamon Press, London.

NAIR, V.J. & V.S. RAMACHANDRAN (1982): Five plant records from Kerala. *Bull. Bot. Surv. India* 22:193.

SREEKUMAR, P.V. & V.J. NAIR (1991): Flora of Kerala Grasses. Botanical Survey of India. Calcutta.

VAJRAVELU, E. & P. DANIEL (1983): Enumeration of Threatened Plants of Peninsular India. Pp. 8-43. In: Material for a Catalogue of Threatened plants of India (Eds: Jain, S.K.

& A.R.K.Sastry). Botanical Survey of India, Calcutta.

VAN WELZEN, P.C. (1981): A taxonomic revision of the genus *Arthraxon* Beauv. (Graminae). *Blumea* 27: 255-300.

VED PRAKASH & S.K. JAIN (1984): Poaceae: Tribe Ischneae in Fascicles of Flora of India 14: 1-42. Botanical Survey of India, Calcutta.

## 24. NEW GENERIC RECORDS OF GRASSES FOR MAHARASHTRA

1500 specimens of about 300 species of grasses and bamboos have been collected during our extensive field survey over the past three years. Some of the specimens collected from Gondiya district of Maharashtra were of *Diectomis fastigiata*; specimens collected from Ajara of Kolhapur district were identified as *Lepturus radicans*. As both *Diectomis* and *Lepturus* form new generic records for the state, a detailed description along with illustration and field notes are presented in this paper. The specimens have been deposited in the herbarium of Shivaji University, Kolhapur.

Monotypic genus *Diectomis* Kunth is widely distributed in China, Myanmar, tropical America, Africa and India.

*Diectomis fastigiata* (Sw.) Kunth in Humb. Et Bonpl., nov. gen. et Sp. 1, 193 (1816) t. 64; Bor, Grass. Bur. Ceyl. Ind. Pak. 135. 1960; Moulik, Grass. Bam. Ind. 1:275. 1997. *Andropogon fastigiata* Swartz, Prodr. Veg. Ind. Occ. 26, 1788; Hook. F., Fl. Brit. India 7: 167, 1896 (Fig. 1).

Annual. Culms terete, erect or geniculate at base, 20-80 cm high; nodes glabrous. Leaf: Sheaths terete, 1.5-5 cm long, glabrous; ligule membranous, 3.5-4 mm long; blades linear, 2.5-20 x 0.1-0.2 cm long, glabrous, setaceous. Raceme single, enclosed by spathe, 2-3.5 cm long, joints turbinate, slightly compressed, 2.6-3 mm long, ciliate on both margins with white hairs. Callus short, bearded. Sessile spikelets coriaceous, linear-lanceolate, 3.3-4 x 0.4-0.5 mm. Lower glume coriaceous, linear-lanceolate, 3.8-4 x 0.4-0.5 mm, 6-nerved, deeply grooved on the back, 2-keeled, ciliate in the groove in upper half, apex 2-toothed. Upper glume coriaceous, boat shaped, 3.3-3.5 x 0.8-0.9 mm, 3-nerved, 1-keeled; keels ciliate, running into a capillary, 10-12 mm long awn, apex 2-toothed. Lower lemma membranous, ovate-lanceolate, 2.8-3 x 0.4-0.5 mm, strongly 2-keeled, 2-nerved, deeply grooved on the back, margins ciliate, apex obtuse, epaleate. Upper lemma membranous, boat shaped 2.6-2.7 x 0.6-0.7 mm 1-nerved, apex 2-fid, awned from the sinus; awn 20-25 mm long, scaberulous. Palea hyaline, oblong-elliptic, 2-2.2 x 0.4-0.5 mm, nerveless, obtuse, stamens 3; anthers 0.8-1.0 x 0.2-0.3 mm, ovary linear, 0.4-0.5 x 0.2-0.3 mm. Lodicules 2, cuneate, 0.4-0.5 mm. Caryopsis elliptic-obovate, 1.7-1.8 x 0.4-0.5 mm. Pedicle of pedicelled spikelet turbinate, slightly compressed, 2.3-2.5 mm, densely ciliate on the margins. Pedicelled spikelet ovate-

lanceolate, 6.8-7 mm long. Lower glume membranous, ovate-lanceolate, 6.8-7 x 1.5-1.7 mm, 15-nerved, central nerve distinct, 2-keeled; keels obscurely winged, scabrid, 2-toothed at apex, median awn 5 mm long. Upper glume membranous, ovate-lanceolate, 3.2-3.4 x 0.4-0.5 mm, 5-nerved, 1-keeled, slightly 2-toothed at apex, awned; awn 3 mm long, ciliate on margins. Lemma membranous, ovate-lanceolate, 1.8-2 x 0.3-0.4 mm, nerveless, margins ciliate, acute, epaleate.

Growing in sandy soil and on rocky slopes.

**Fl. & Fr.:** September-November.

**Note:** *Diectomis fastigiata* has been reported from Uttar Pradesh, Madhya Pradesh, Bihar, Orissa and West Bengal. It grows in sandy soils and on rocky slopes in Gondiya district in Eastern Maharashtra. It is a very good fodder grass in young stages before the awns begin to form (Bor 1960). It turns red as it dries. It is very distinct in its 15-nerved lower glume of pedicelled spikelet.

**Exsiccata:** Borkanhar (Gondiya District) Potdar 1477, Mandodevi (Gondiya District) Potdar 1482.

Genus *Lepturus* R. Br. with about 8 species is distributed in coastal east Africa, Madagascar to Australia and Polynesia. So far, *Lepturus radicans* is the only species reported for India from Karnataka, which was recently collected from Maharashtra.

*Lepturus radicans* (Steud.) A. Camus in Ann. Soc. Linn. Lyon, 1922, n.s., 69, 87 (1923); Bor, Grass. Bur. Ceyl. Ind. Pak. 585. 1960; Moulik, Grass. Bamb. Ind. 2: 463. 1997 (Fig. 2).

Perennial, stoloniferous. Culms prostrate, 10-30 cm high, rooting at nodes, nodes glabrous. Leaf; sheath terete, 1-4 cm long, glabrous, ligule membranous 0.5-0.8 mm long; blades linear, 3-12 x 0.2-0.6 cm long, glabrous, base with bulbous based hairs. Spike single, 2-6 cm long. Joints not breaking easily, 3 mm long, joints hollow on one side alternately. Spikelets sessile, coriaceous, linear-lanceolate, 4-4.5 mm long, sunken in hollow of rachis. Lower glume absent. Upper glume coriaceous, flat, linear-lanceolate, 3.5-4 x 0.6-0.8 mm, 10-12-nerved apex acute to acuminate. Lower lemma membranous, boat shaped, 2.6-2.8 x 0.5-0.6 mm, 3-nerved, apex acuminate. Palea membranous, margins inflexed, 2.5-2.6 x 0.5-0.6 mm, 2-nerved, apex acute, stamens 3, anthers 1.3-1.5 x 0.1-0.2 mm, ovary obovate, 1.5-2 x 0.4-0.5 mm. Lodicules 2, cuneate,